

**Pinellas Environmental Restoration Project
Quarterly Progress Report
for the Young - Rainey STAR Center's
4.5 Acre Site**

October through December 2002

January 2003

Prepared by
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Complete Appendices will be provided upon request. Click [appendices](#) to request

[Appendix A. Laboratory Reports—October 2002 Quarterly Results \(Table A-1 Only\)](#)

Acronyms and Abbreviations

bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylene
°C	degrees Celsius
ComQAP	Comprehensive Quality Assurance Plan
COPC	contaminants of potential concern
DCE	dichloroethene
DOE	U.S. Department of Energy
DPE	dual-phase extraction
DPT	direct push technology
EPA	U.S. Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
ft	feet
HPC	Heterotrophic Plate Count
HSWA	Hazardous and Solid Waste Amendment
IRA	Interim Remedial Action
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
mg/L	milligrams per liter
mV	millivolts
NGVD	national geodetic vertical datum
NTU	Nephelometric Turbidity Units
PCIC	Pinellas County Industrial Council
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
STAR Center	Young – Rainey Science, Technology, and Research Center
STL	Severn Trent Laboratories
TCE	trichloroethene
TCOPC	total contaminants of potential concern
TVOCs	total volatile organic compounds
VOCs	volatile organic compounds

1.0 Introduction

The Young - Rainey Science, Technology, and Research Center (STAR Center) is a former U.S. Department of Energy (DOE) facility constructed in the mid-1950s in Pinellas County, Florida. The STAR Center, while owned by DOE, primarily manufactured neutron generators for nuclear weapons. Other products manufactured at the STAR Center have included radioisotopically-powered thermoelectric generators, thermal batteries, specialty capacitors, crystal resonators, neutron detectors, lightning arrestor connectors, and vacuum switch tubes. In 1987, the U.S. Environmental Protection Agency (EPA) performed a Resource Conservation and Recovery Act (RCRA) Facility Assessment at the site to gather information on potential releases of hazardous materials. In February of 1990, EPA issued a Hazardous and Solid Waste Amendments (HSWA) Permit to DOE, enabling DOE to investigate and perform remediation activities in those areas contaminated by hazardous materials resulting from DOE operations. In November 2000, the State of Florida received HSWA authorization from the EPA. On March 17, 1995, DOE sold the facility to the Pinellas County Industrial Council (PCIC). The sales contract includes clauses to ensure continued compliance with Federal, State, and local regulations while DOE remediates the site. On July 1, 1999, the PCIC was disestablished and ownership of the STAR Center changed to the Pinellas County government.

Administration of DOE activities at the facility is the responsibility of the DOE Idaho Operations Office. Responsibility for environmental restoration activities, conducted under the EPA RCRA Corrective Action Program of 1984, was transferred from DOE's Pinellas Area Office to DOE's Grand Junction Office in October 1997. S.M. Stoller Corporation (Stoller), a prime contractor to DOE's Grand Junction Office, provides technical support to DOE for remediation and closure of all active solid-waste management units on site and for the 4.5 Acre Site.

The STAR Center is a 99-acre facility located in Largo, Florida, and lies in the northeast quarter of Section 13, Township 30 South, Range 15 East ([Figure 1](#)). The 4.5 Acre Site is located to the northwest of the STAR Center ([Figure 2](#)). This parcel was owned by DOE from 1957 to 1972, at which time it was sold to a private landowner. During the period of DOE ownership, the property was used for disposal of drums of waste resins and solvents. As a result of this practice, the surficial aquifer was impacted by volatile organic compounds (VOCs), primarily vinyl chloride, toluene, trichloroethene (TCE), and 1,2-dichloroethene (DCE). DOE completed a source removal in 1985. An Interim Remedial Action (IRA) consisting of ground water extraction and treatment via air stripping, and a routine ground water monitoring program were initiated in May 1990. In July 1997, a modification of the IRA involving installation of dual-phase extraction (DPE) wells provided a more aggressive system to remove ground water contamination. In November 1999, the DPE/air-stripping system was replaced with an in-situ biosparge treatment system. All activities associated with this site are conducted consistent with the Florida Department of Environmental Protection (FDEP) *Corrective Actions for Contamination Site Cases* (FDEP not dated) and the *Remediation Agreement for the Four and One-Half Acre Site in Largo, Pinellas County, Florida, Between: State of Florida Department of Environmental Protection and U.S. Department of Energy* (FDEP 2001).

The *4.5 Acre Site Biosparge System Integration Plan* (DOE 2000a) was approved by FDEP on January 17, 2001. This plan states that performance monitoring would be undertaken on a quarterly basis. Therefore, in April 2001, performance monitoring of the remedial system through the use of direct push technology (DPT) was undertaken. With this report, seven quarters of data have been collected. Samples of ground water were collected from 40 locations to depths

up to 30 feet (ft) and were analyzed for volatile organics and iron. Section 2.3 provides results from analysis of samples that were collected as part of these activities. Additional information related to the biosparge treatment systems is discussed in more detail in Section 3.0.

Ground water cleanup at the 4.5 Acre Site is proceeding, in part, according to provisions in the document *Remediation Agreement for the Four and One-Half Acre Site in Largo, Pinellas County, Florida* (FDEP 2001), an agreement between DOE and the FDEP. The Remediation Agreement requires preparation of a Remedial Action Plan (RAP) to evaluate and select the final remedial action alternative to clean up ground water beneath the site to levels that are protective of public health and the environment. The RAP was completed in July 2001, and was approved by the FDEP in August 2001.

This document is the quarterly progress report for the 4.5 Acre Site for October through December 2002, as requested by the FDEP. The results of monitoring activities, an assessment of plume movement, a summary of the IRA treatment system performance, and a summary of ongoing and projected work are provided in this report.

1.1 Site Update

The tables summarizing the VOCs results have changed beginning with this report. Over the last year, DOE has been working with FDEP to assemble a list of contaminants of potential concern (COPCs) for the 4.5 Acre Site and the STAR Center. The COPCs are the contaminants that are frequently measured above their respective maximum contaminant levels, as determined in the *Historical Review and Evaluation of Contaminants of Potential Concern* (DOE 2002a). Hereafter, only the VOCs that have been determined to be COPCs will be reported in a table as part of this report. Results for non-COPC analytes can be found in the laboratory reports in [Appendix A](#).

Four new DPT locations (DP44–DP47) were added to the 4.5 Acre Site quarterly sampling in October for plume control assessment. Each new location was sampled at two target depths, 18–22 ft and 26–30 ft. The DPT locations were sampled for VOCs and for the standard field parameters including field-measured iron. This was a one-time sampling event for these four locations. Locations are shown on [Figure 3](#) and the results are shown in [Table 1](#).

In November 2002, the field work to collect additional ground water and geochemical data and soil samples for laboratory analysis as part of a performance evaluation of the biosparge system was undertaken. The purpose of this performance evaluation was to address two questions: 1) to determine if air is being delivered to the target zone and 2) to determine the fate of the COPCs under aerated conditions. Six major tasks were accomplished as part of this evaluation. These tasks included:

- Installing in situ pressure transducers and water content reflectometers to test whether or not injected air is being evenly distributed in the subsurface;
- Analyzing soil samples to determine the chemical/biochemical oxygen demand in the subsurface and the associated impact of these demands on the injected oxygen;
- Installing six one-inch diameter monitoring wells to directly observe oxygen and VOC concentration changes during biosparge operations;

- Determining biodegradation rates and oxygen consumption rates utilizing microcosm experiments with site soils and ground water;
- Performing biological characterization by determining the phospholipid fatty acid concentrations of subsurface sediments; and
- Determining VOC concentrations in soil gas at selected areas of the site.

The results of these tasks will be summarized in a report that will be prepared during the first quarter of 2003.

1.2 Quarterly Site Activities

- Obtained water-level measurements from all monitoring wells on October 7–8, 2002.
- Conducted the quarterly sampling event (i.e., collected ground water samples from 20 monitoring wells and 60 ground water samples from 35 DPT sample locations) in October 2002 for analysis of VOCs.
- Collected 10 samples from four additional DPT locations that were placed to gather information for plume delineation.
- Collected field parameter and iron data from all DPT locations to evaluate geochemical conditions during active biosparging
- Reported the results of quarterly sampling events (this document).
- Performed preventive maintenance on the biosparge systems throughout the quarter.

2.0 Monitoring Data

2.1 Ground Water Elevations and Flow

Within a 3-hour period on October 7, 2002, depth-to-water measurements were taken in all monitoring wells at the 4.5 Acre Site (except those along the railroad tracks) as part of the sitewide quarterly sampling event. Measurements in the wells along the tracks were made in the morning on October 8. The depth to water in each well was measured with an electronic water-level indicator. The October 2002 ground water elevation data for the 4.5 Acre Site are listed in [Table 2](#). The data and information from deep wells were used to construct contours of water levels in the deep surficial aquifer in [Figure 4](#).

The water levels were measured 3 and 4 days following shutdown of the biosparging system on October 4, 2002. The interpretative flow patterns shown on Figure 4 indicate a slight ground water low in the center of the site (around monitoring well PIN20–M049), with ground water flowing towards this low from all directions. These flow patterns suggest that ground water in the center of the site was displaced by air from the biosparging system, and 3 days following

system shutdown, water was still flowing towards this hydraulic low. This flow pattern is consistent with the patterns observed the previous five quarters. Under static, non-pumping conditions, ground water at the site has historically been observed to flow to the north-northwest with no hydraulic low in the center of the site.

The water table ranged from about 3 to 7 ft below land surface (bls), with ground water elevations that ranged from a high of 15.30 ft at PIN20-TE01 to a low of 9.12 ft at PIN20-M025. The hydraulic gradients in the south and north areas of the site were approximately 0.008 and 0.002 feet per foot, respectively. These gradients are similar to those observed in October 2001, but slightly less than those observed in July 2002. Using Darcy's Law, along with approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity, ground water in the south part of the site is estimated to move about 10 ft/year, which is consistent with previously observed velocities of 6 to 10 ft/year.

2.2 Ground Water Sampling

Twenty monitoring wells and 40 DPT locations were sampled by Stoller personnel in October 2002. Four of the DPT locations were one-time locations sampled to aid in plume delineation. All DPT locations were sampled at approximately 26 to 30 ft bls and a selected subset of 30 DPT locations were also sampled at approximately 18 to 22 ft bls (total of 70 DPT ground water samples). All DPT locations were filled with bentonite chips after sampling. The sampling screen depths bls are used as part of the identifier for the DPT locations for the tables in this report.

All samples were collected in accordance with the Stoller *Sampling and Analysis Plan for the Young - Rainey STAR Center* (DOE 2002b), using FDEP procedures. All samples collected were submitted to Severn Trent Laboratories (STL) for analysis of VOCs using EPA Method 8021. STL is accredited by the Florida Department of Health in accordance with the National Environmental Laboratory Accreditation Conference, certification number E84282.

The monitoring wells were purged with dedicated bladder pumps. The wells were micropurged, and the samples were collected when the field measurements stabilized. DPT locations were purged using a peristaltic pump and sampled when the field measurements stabilized. [Table 3](#) lists measurements of pH, specific conductance, dissolved oxygen, oxidation/reduction potential, turbidity, and temperature recorded at the time each sample was collected. These measurements were collected using a flow cell and multiparameter meter. Values for total iron and ferrous iron were measured at the DPT locations using a colorimeter and are discussed in Section 2.4.

2.3 Ground Water Analytical Results

Individual COPC and total COPCs (TCOPCs) concentrations in samples collected from wells and direct-push locations at the 4.5 Acre Site are included in [Table 4](#). The previous four quarters of results are included in Table 4 for comparison. Figure 3 shows the TCOPCs concentrations.

No COPCs were detected in samples from the 37 sample locations listed below.

PIN20-0503	PIN20-DP28 18 ft	PIN20-DP35 18 ft	PIN20-M035
PIN29-DP03 18 ft	PIN20-DP28 26 ft	PIN20-DP46 18 ft	PIN20-M036
PIN20-DP03 24 ft	PIN20-DP29 18 ft	PIN20-DP47 18 ft	PIN20-M054
PIN20-DP04 24 ft	PIN20-DP30 18 ft	PIN20-DP47 23 ft	PIN20-M22D
PIN20-DP10 24 ft	PIN20-DP30 23 ft	PIN20-M011	PIN20-M40D
PIN20-DP13 18 ft	PIN20-DP31 18 ft	PIN20-M012	PIN20-M40S
PIN20-DP13 24 ft	PIN20-DP32 18 ft	PIN20-M019	PIN20-M41D
PIN20-DP16 23 ft	PIN20-DP33 18 ft	PIN20-M023	
PIN20-DP19 23 ft	PIN20-DP34 18 ft	PIN20-M024	
PIN20-DP23 24 ft	PIN20-DP34 23 ft	PIN20-M025	

Samples from 53 sample locations listed below contained COPCs at detectable levels.

PIN20-0502	PIN20-DP11 24 ft	PIN20-DP21 23 ft	PIN20-DP41 23 ft
PIN20-DP01 18 ft	PIN20-DP12 18 ft	PIN20-DP22 22 ft	PIN20-DP44 18 ft
PIN20-DP01 22 ft	PIN20-DP12 25 ft	PIN20-DP24 18 ft	PIN20-DP44 23 ft
PIN20-DP02 18 ft	PIN20-DP14 18 ft	PIN20-DP24 22 ft	PIN20-DP45 18 ft
PIN20-DP02 26 ft	PIN20-DP14 22 ft	PIN20-DP25 18 ft	PIN20-DP45 23 ft
PIN20-DP05 23 ft	PIN20-DP15 18 ft	PIN20-DP25 23 ft	PIN20-DP46 23 ft
PIN20-DP06 18 ft	PIN20-DP15 23 ft	PIN20-DP26 23 ft	PIN20-M001
PIN20-DP06 24 ft	PIN20-DP17 18 ft	PIN20-DP27 22 ft	PIN20-M015
PIN20-DP07 18 ft	PIN20-DP17 22 ft	PIN20-DP29 22 ft	PIN20-M049
PIN20-DP07 26 ft	PIN20-DP18 18 ft	PIN20-DP31 22 ft	PIN20-M053
PIN20-DP08 18 ft	PIN20-DP18 23 ft	PIN20-DP32 23 ft	PIN20-M18D
PIN20-DP08 24 ft	PIN20-DP20 18 ft	PIN20-DP33 23 ft	
PIN20-DP09 24 ft	PIN20-DP20 24 ft	PIN20-DP35 23 ft	
PIN20-DP11 18 ft	PIN20-DP21 18 ft	PIN20-DP41 18 ft	

The maximum TCOPCs value detected was 24,000 micrograms per liter ($\mu\text{g/L}$) at PIN20-DP12 25 ft. The compound detected at the highest concentration in PIN20-DP12 25 ft was cis-1,2-DCE at a concentration of 19,000 $\mu\text{g/L}$.

Laboratory reports for quarterly samples collected in October 2002 are provided in Appendix A.

2.4 Geochemical Parameters

As discussed in the July to September 2002 quarterly report, Heterotrophic Plate Count (HPC) analysis was discontinued following the July 2002 sampling event. As part of the performance evaluation, samples were collected during November 2002 for analysis of phospholipid fatty acids. The usefulness of this analysis will be evaluated under the performance evaluation plan. If this analysis proves applicable for monitoring the biosparging system, it should be implemented to replace the HPC analysis at the same locations and at the same frequency.

Also as part of the regular annual monitoring, samples for field analysis of dissolved total and ferrous iron were collected during the DPT sampling. Collection of these data is intended to monitor conversion from reducing to oxidizing conditions during biosparging. As the biosparging system continues operation, the reduced iron should be converted to oxidized iron. The measured iron values and the calculated percent of oxidized iron are shown with the rest of the field measurements in Table 1 and Table 3.

Laboratory reports for annual samples collected in October 2002 are provided in Appendix A.

2.5 Quality Assurance/Quality Control

Five duplicate VOCs samples were compared and the relative percent differences (RPDs) between the results were calculated. Results of VOCs analysis for each duplicate sample are listed in [Table A-1](#) in Appendix A. From the five duplicate samples, 180 individual compounds were analyzed. None of the compounds failed the suggested control limit of an RPD of less than 30 percent when the concentration was greater than 5 times the detection limit. All data are considered Class A level, indicating that the data may be appropriately used for quantitative and qualitative purposes.

According to the Stoller Sampling Plan, duplicate samples should be collected at a frequency of one duplicate for every 20 or less samples. There were 20 PIN20 ground water VOCs samples collected from standard monitoring wells and one duplicate sample. For the DPT locations, there were 70 VOCs samples collected and four duplicate samples, therefore, the duplicate criteria were met.

Five trip blanks and four equipment blanks were submitted for analysis. Estimated quantities of methylene chloride were observed in seven of the samples. These results were above the analytical method detection limit but below the reporting limit. The level of contamination is slightly higher than seen in the prior sampling event in July 2002. The highest estimated methylene chloride value seen in the blanks was 3.8 µg/L.

One equipment blank collected on October 8, 2002, contained toluene at 6.4 µg/L and TCE at 20 µg/L, and “J” values were also found for benzene, methylene chloride, and tetrachloroethene. The equipment blank was taken from an unused section of the middle of a large roll of tubing used in the DPT sampling. A very similar pattern of hits was also found in the well sampled just prior to this, PIN20–DP31 18 ft. Historical results from this well have been nondetects. Based on the similar contamination pattern in the equipment blank and the sample, it is likely that both were contaminated by the same source. The positive results for toluene, TCE, and total volatile aromatics from the PIN20–DP31 18 ft were given an “R” qualifier to indicate that the data is considered invalid. Because these data are considered invalid they will not be shown on Table 4. None of the other blanks from this sampling event showed this contamination. The source of contamination has not been ascertained.

3.0 Biosparge System Operation

3.1 Biosparge System Performance

The biosparge systems at the 4.5 Acre Site were continuously operational throughout the quarter, with three exceptions. The biosparge systems were shut down for quarterly sampling activities from October 4 through 11, 2002. Upon completion of sampling on October 11, the biosparge operations were restarted. In November, biosparge operations were shutdown from November 8 through 18 for performance evaluation activities discussed in detail in Section 1.1. In December, a site-wide power outage suspended biosparge operations from the night of December 22

through the morning of December 23. Biosparge operations resumed on December 23 with the use of compressed air.

Additionally, the failed blower at Biosparge System 2 from the previous quarter was installed in October. This blower was successfully restarted after quarterly sampling efforts were completed on October 11.

3.2 Biosparge System Sampling and Monitoring

As described in the previous quarterly report, the Interim Remedial Action Plan Addendum for the 4.5 Acre Site outlined sampling and monitoring activities to monitor biosparging activities. The *4.5 Acre Site Biosparge Monitoring Report* (DOE 2000b), presents the data collection activities associated with the biosparging system start-up, analyzes the monitoring results, and makes recommendations for continued operations. This report was issued in July 2000. Subsequently, biosparging activities will be monitored on a quarterly basis during regular quarterly sampling events.

4.0 Tasks to be Performed Next Quarter

The following tasks are scheduled during the next quarterly period (January through March 2003).

- Sampling and analysis of ground water and water level measurements in early January.
- DPT sampling of ground water.
- Continue collecting field data and running laboratory column testing as part of the performance evaluation of the biosparging system and download data from the Performance Evaluation data logger.
- Routine preventive maintenance activities.

5.0 References

FDEP, not dated. *Corrective Actions for Contamination Site Cases*, <http://www.dep.state.fl.us>

———, 2001. *Remediation Agreement for the Four and One-Half Acre Site in Largo, Pinellas County, Florida*, U.S. Department of Energy, Grand Junction Office, Grand Junction, Colorado, January.

U.S. Department of Energy, 2000a. *4.5 Acre Site Biosparge System Integration Plan*, GJO-2000-182-TAR, MAC-PIN 25.5.1.1, prepared by U.S. Department of Energy, Grand Junction Office, Grand Junction, Colorado, December.

U.S. Department of Energy, 2000b. *4.5 Acre Site Biosparge Monitoring Report*, MAC–PIN 25.5.1, prepared by U.S. Department of Energy, Grand Junction Office, Grand Junction, Colorado, July.

———, 2002a. *Historical Review and Evaluation of Contaminants of Potential Concern*, GJO–2002–359–TAC, GJO–PIN 2.4-2, prepared by U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, September.

———, 2002b. *Sampling Procedures for the Young – Rainey STAR Center*, GJO–2001–206–TAR, MAC–PIN 2.4-1, prepared by U.S. Department of Energy, Grand Junction Office, Grand Junction, Colorado, July.

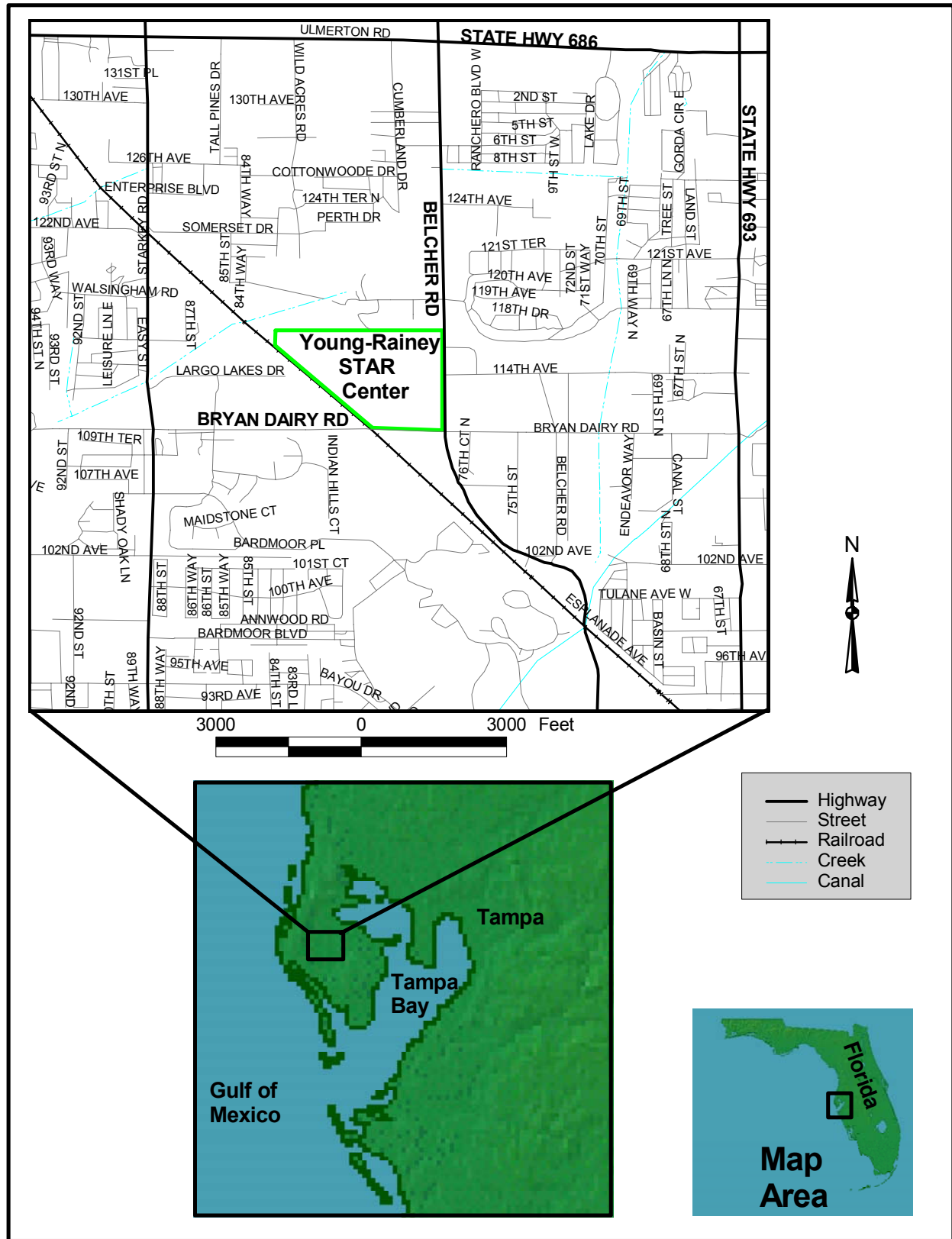


Figure 1. Young - Rainey STAR Center Location

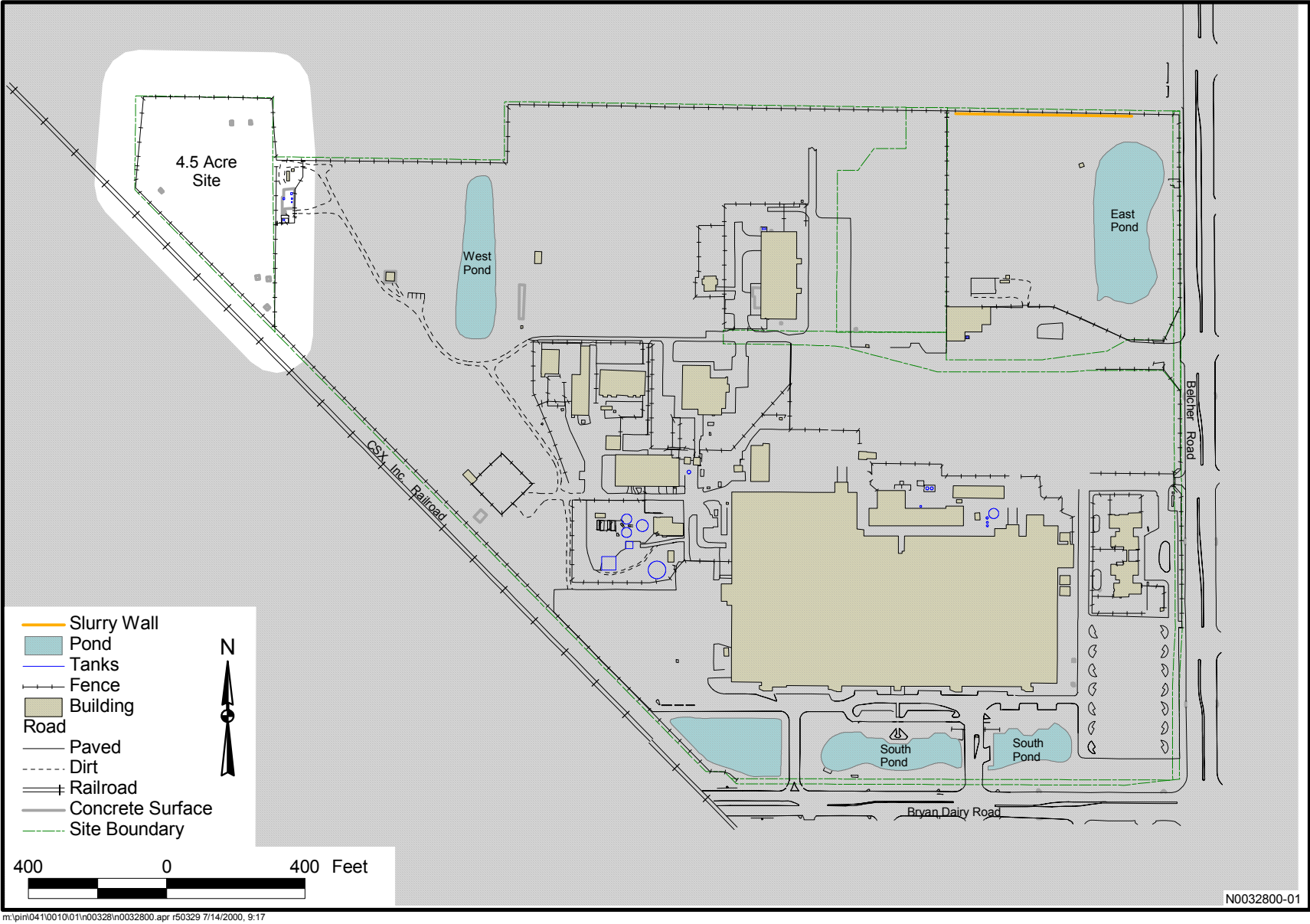


Figure 2. 4.5 Acre Site Location

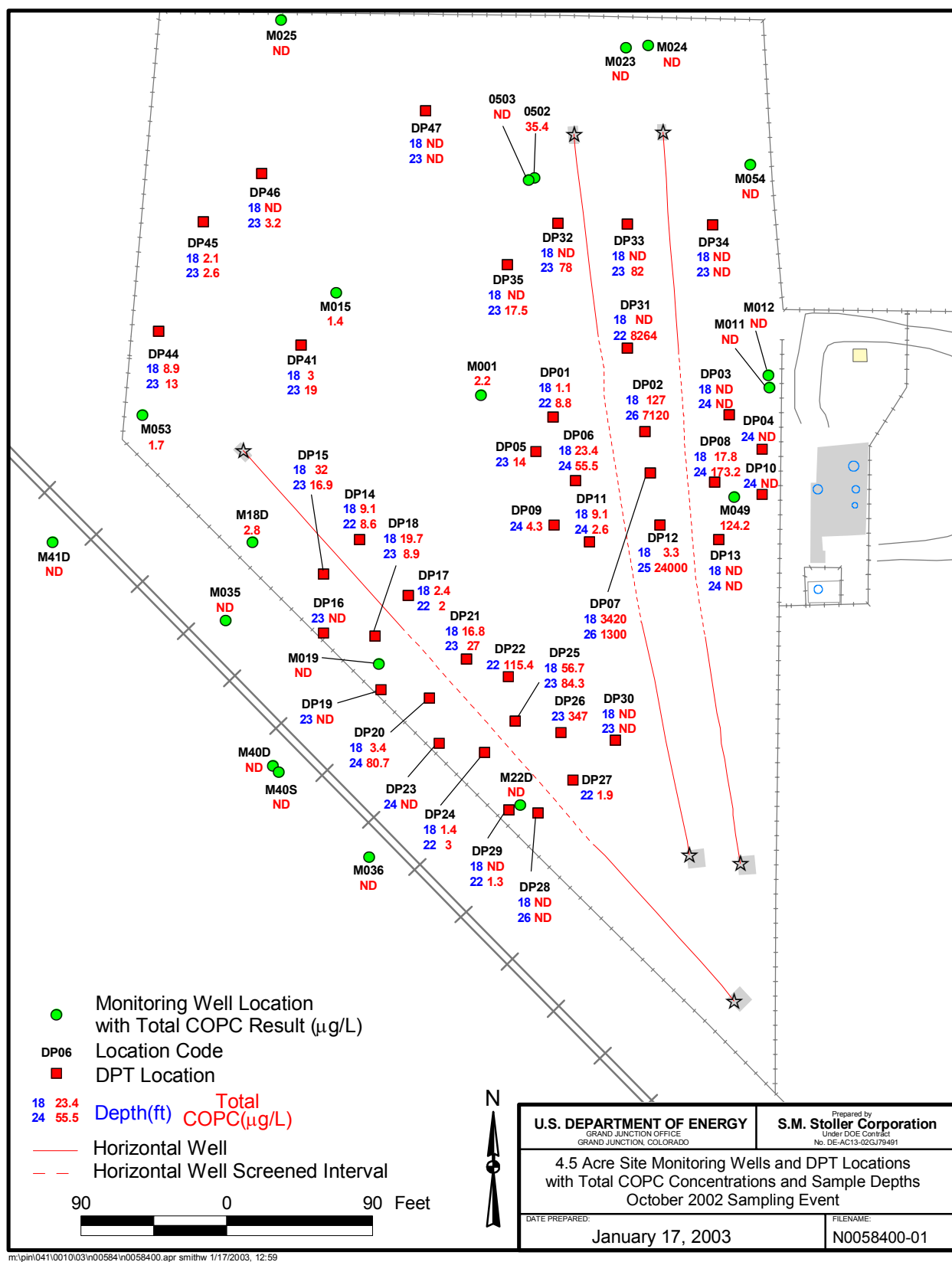
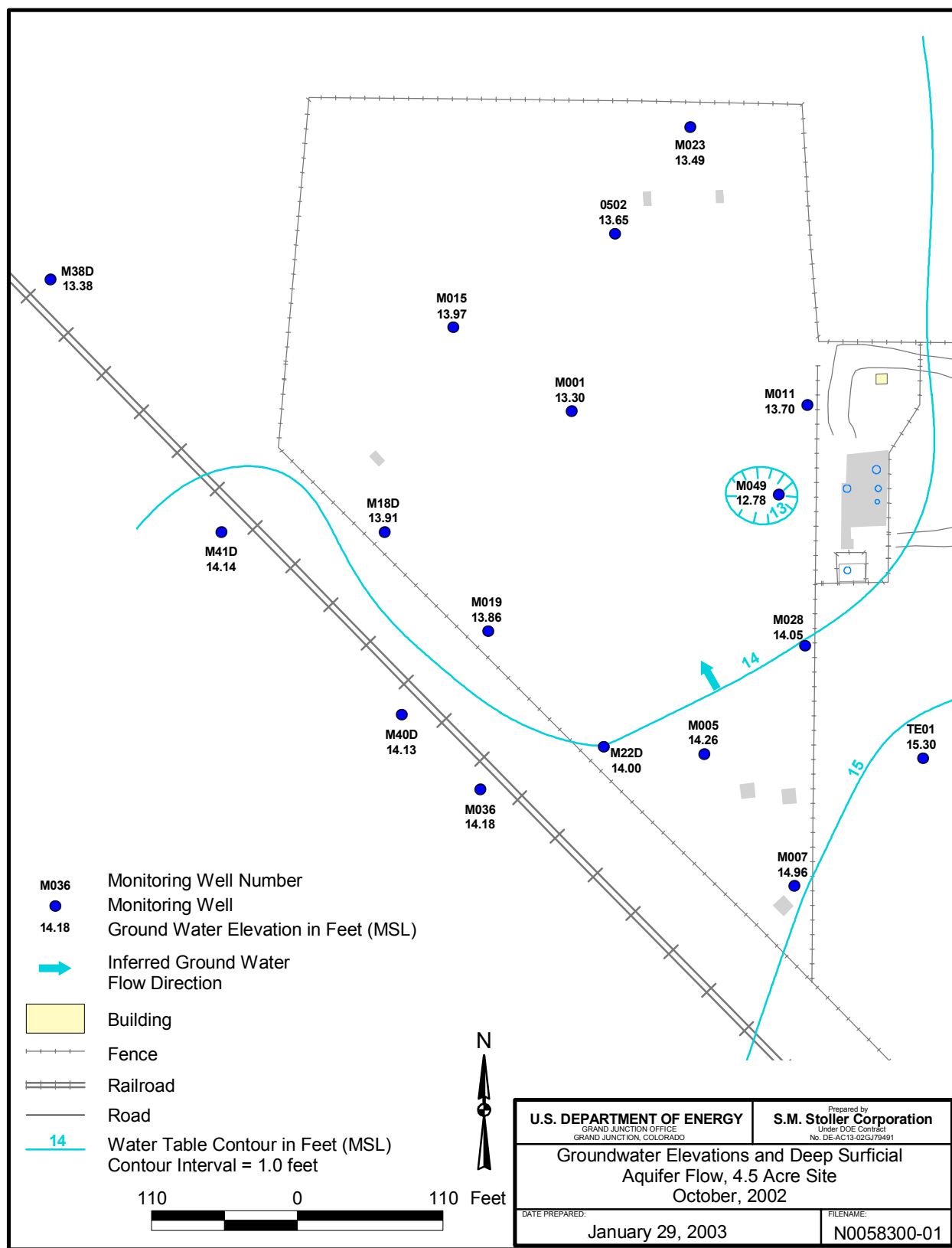


Figure 3. Monitoring Well Locations and DPT Locations with Total COPC Concentrations and Sample Depths



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Figure 4. Ground Water Elevations and Deep Surficial Aquifer Flow, 4.5 Acre Site, October 2002

*Table 1. Field Measurements and VOCs Concentrations from Additional DPT Locations at the 4.5 Acre Site
(only detected volatiles shown)*

Location	Screen Depth (Ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm) ^a	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Ferrous Iron (mg/L)	Field Total Iron (mg/L)	Oxidized Iron as Percent of Total Iron	TCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Total 1,2-DCE ^b (µg/L)	Vinyl chloride (µg/L)	Benzene (µg/L)	Total COPC ^c (µg/L)
PIN20		4.5 Acre Site															
DP41	18-22	26	362	913	6.55	-59.8	0.36	2.8	5.3	47	<1	<1	<1	ND	3	0.12J	3
DP41	23-27	25.9	603	910	6.69	-44.3	0.39	3.5	4.8	27	<1	0.28J	<1	0.28J	19	<1	19
DP44	18-22	26.2	297	>1,000	6.5	-35.4	0.61	4.1	5.3	23	<1	0.27J	<1	0.27J	8.9	<1	8.9
DP44	23-27	25.8	349	915	6.72	-83.6	0.36	3.8	5	24	<1	<1	<1	ND	13	<1	13
DP45	18-22	26.1	272	592	6.86	-86.9	0.27	1.8	2.1	14	<1	2.1	<1	2.1	0.48J	<1	2.1
DP45	23-27	25.9	333	>1,000	6.77	-52.6	1.16	1.1	1.7	35	<1	0.46J	<1	0.46J	2.6	<1	2.6
DP46	18-22	25.8	307	507	6.34	-29.8	0.9	0.8	0.9	11	<1	0.38J	<1	0.38J	<1	0.12J	ND
DP46	23-27	25.8	321	>1,000	6	-6.5	2.3	0.7	1.4	50	<1	0.29J	<1	0.29J	3.2	0.16J	3.2
DP47	18-22	26.8	322	>1,000	6.29	-72.6	0.81	2.5	3.1	19	<1	<1	<1	ND	<1	<1	ND
DP47	23-27	26.6	250	988	6.32	-44.6	0.6	0.9	2.4	63	<1	<1	<1	ND	<1	<1	ND

^atemperature corrected to 25°C

^bTotal 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE

^cTotal COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE and trans-1,2-DCE values are not part of the Total COPC value because these values are included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.

ND = Not detected.

J = Estimated value, result is between the reporting limit and the method detection limit.

Table 2. Water-Level Data at the 4.5 Acre Site

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN02	West Pond			
502D	10/7/2002	12:43	2.71	15.79
W002	10/7/2002	17:00	--	16.1
PIN05	Trench Site			
0500	10/7/2002	12:35	2.94	15.56
PIN20	4.5 Acre Site			
0502	10/7/2002	10:50	3.75	13.65
0503	10/7/2002	10:29	3.76	13.64
M001	10/7/2002	10:45	4.3	13.3
M003	10/7/2002	10:14	3.61	14.59
M005	10/7/2002	10:15	4.04	14.26
M007	10/7/2002	10:12	4.49	14.96
M011	10/7/2002	10:37	4.4	13.7
M012	10/7/2002	10:39	3.6	14.4
M015	10/7/2002	10:21	3.83	13.97
M019	10/7/2002	10:16	4.14	13.86
M023	10/7/2002	10:24	5.98	13.49
M024	10/7/2002	10:25	4.02	13.78
M025	10/7/2002	10:23	7.18	9.12
M028	10/7/2002	10:10	4.15	14.05
M035	10/8/2002	07:58	6.13	12.67
M036	10/8/2002	07:55	5.12	14.18
M049	10/7/2002	10:35	5.02	12.78
M053	10/7/2002	10:22	3.21	13.99
M054	10/7/2002	10:27	3.63	14.07
M18D	10/7/2002	10:19	3.79	13.91
M22D	10/7/2002	10:11	3.8	14
M38D	10/8/2002	07:48	5.12	13.38
M40D	10/8/2002	07:57	5.27	14.13
M40S	10/8/2002	07:57	5.07	14.13
M41D	10/8/2002	08:00	4.96	14.14
TE01	10/7/2002	12:30	2.8	15.3

Table 3. Field Measurements of Samples Collected at the 4.5 Acre Site

Location ^a	Screen Depth (Ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm) ^b	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Ferrous Iron (mg/L)	Field Total Iron (mg/L)	Oxidized Iron as Percent of Total Iron
PIN20		4.5 Acre Site								
0502	21.2-31.2	27.3	682	36.9	6.63	-67	0.65	--	--	--
0503	13.2-23.2	27.14	795	64.2	6.57	-77	0.65	--	--	--
DP01	18-22	27.1	861	499	6.57	-118.9	3.85	17	9.6	0 ^c
	22-26	27	622	435	6.19	-90.8	14.98	5.7	7.4	23
DP02	18-22	27	2,156	279	6.21	-94.8	2.67	35.4	35.6	1
	26-30	26.5	940	540	5.97	-25.5	5.12	6	6.8	12
DP03	18-22	26.7	459	690	6.19	-67.8	2.29	6.8	9.3	27
	24-28	26.7	393	576	6.11	-44.2	2.43	2.9	3.5	17
DP04	24-28	26.3	414	538	6.17	-51.6	3.51	4.4	5.2	15
DP05	23-27	26.8	683	496	6.63	-112.7	3.99	6.2	8.1	23
DP06	18-22	27.3	869	445	6.46	-84.7	14.6	13.6	14.7	7
	24-28	26.7	761	243	6.46	-77.1	4.64	5.3	7.3	27
DP07	18-22	26.3	1,141	282	6.55	-68	7.6	9.1	11.4	20
	26-30	25.8	809	415	6.59	-53.1	3.96	4.4	4.4	0
DP08	18-22	26.1	1,433	549	6.53	-92	5.91	24.9	27.2	8
	24-28	26	810	301	6.52	-65.2	4.88	5.2	5.7	9
DP09	24-28	28.8	1,014	>1,000	6.45	-76.3	25.8	2.7	3.8	29
DP10	24-28	25.7	717	319	6.55	-68.4	2.35	5	6.6	24
DP11	18-22	26.9	1,058	355	6.58	-89.5	17.27	8.9	10.6	16
	24-28	26.5	883	578	6.55	-66.3	11.2	4.6	5.3	13
DP12	18-22	26.1	1,603	364	6.55	-74.9	20.8	13	14.2	8
	25-29	26.2	784	499	6.56	-55.8	5.47	3.4	4.5	24
DP13	18-22	25.5	1,285	247	6.58	-84.2	7.77	19.1	19.1	0
	24-28	25.5	833	346	6.7	-67.5	6.97	4.4	4.5	2
DP14	18-22	26.9	505	648	6.68	-78.5	0.35	7	9.1	23
	22-26	26.7	388	944	6.47	-55.6	0.3	5	6.5	23
DP15	18-22	26.8	457	490	6.65	-77.7	0.48	4.7	7	33
	23-27	26.3	449	932	6.61	-63.6	0.35	3.5	5.3	34

Table 3 (continued). Field Measurements of Samples Collected at the 4.5 Acre Site

Location ^a	Screen Depth (Ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm) ^b	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Ferrous Iron (mg/L)	Field Total Iron (mg/L)	Oxidized Iron as Percent of Total Iron
DP16	23-27	26.3	426	>1,000	6.57	-57.8	0.24	3.8	5.5	31
DP17	18-22	27	443	721	6.61	-64.7	0.4	5.3	6.3	16
	22-26	26.9	1,450	831	6.74	-61.9	0.66	4.8	5	4
DP18	18-22	26.8	441	336	5.97	-59.7	0.28	3.4	4.4	23
	23-27	26.1	407	459	6.06	-56.3	0.47	5.2	5.5	5
DP19	23-27	26.2	514	725	5.9	-53.1	0.35	6	6.2	3
DP20	18-22	26	465	224	6.19	-49.1	0.9	3.8	4.1	7
	24-28	26.1	735	540	6.26	-63.5	0.45	11.6	13.2	12
DP21	18-22	26.5	721	581	6.11	-81.7	3.03	17.4	21.5	19
	23-27	26.1	466	>1,000	6	-68.2	4.49	10	11	9
DP22	22-26	26.7	505	409	6.06	-62.9	8.88	8.6	8.2	0°
DP23	24-28	25.6	641	522	6.46	60.9	0.71	8	8.5	6
DP24	18-22	26.4	819	322	6.18	-37.6	8.48	7.1	8.5	16
	22-26	26.1	778	227	6.32	-74.6	7.52	11	11.5	4
DP25	18-22	26.9	824	540	6.34	-52.8	0.28	13.3	14.1	6
	23-27	26.6	506	725	6.49	-69.3	0.35	8	8.8	9
DP26	23-27	26	302	930	6.91	-96.4	12.21	4.8	5	4
DP27	22-26	26.4	300	893	6.88	-88.7	14.49	4.3	5	14
DP28	18-22	26.3	320	286	6.83	-95.3	14.86	4.7	5.9	20
	26-30	26.2	315	449	6.75	-87.6	19.59	4.8	6.1	21
DP29	18-22	26	304	404	6.36	-67.2	16.15	4.4	4.9	10
	22-26	25.8	369	457	6.1	-62.1	14.2	4.1	4.9	16
DP30	18-22	26.3	339	199	6.79	-102.3	10.71	4.1	6.3	35
	23-27	26	319	>1,000	6.85	-77.8	11.03	3.4	3.3	0°
DP31	18-22	27.2	562	316	6.47	-79	2.81	9.7	11.7	17
	22-26	26.8	602	>1,000	6.03	-43.6	3.66	6.4	7.7	17
DP32	18-22	26.9	448	909	6.43	-67.2	1.18	4.8	7.1	32
	23-27	26.6	405	>1,000	6.25	-41.5	1.81	4	6.3	37

Table 3 (continued). Field Measurements of Samples Collected at the 4.5 Acre Site

Location ^a	Screen Depth (Ft. bls)	Temperature (°C)	Specific Conductance (µmhos/cm) ^b	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Ferrous Iron (mg/L)	Field Total Iron (mg/L)	Oxidized Iron as Percent of Total Iron
DP33	18-22	27	496	402	5.9	-48	3.06	5.1	9.5	46
	23-27	27.2	549	>1,000	5.95	-31.2	7.16	3.4	7.7	56
DP34	18-22	26.7	453	357	6.21	-51.8	3.68	6.6	8.6	23
	23-27	26.3	383	393	5.99	-20	3.96	4.1	5.9	31
DP35	18-22	26.8	342	63	6.34	-65.5	1.35	4.1	6.4	36
	23-27	26.5	311	989	6.17	-31.7	1.07	4	5.2	23
M001	20-25	26.32	902	4.5	6.63	-98	0.98	--	--	--
M011	23.7-28.7	25.93	833	3.3	6.52	-78	1.05	--	--	--
M012	8.6-13.6	27.88	658	9.7	6.81	-37	1.07	--	--	--
M015	20.8-25.8	25.9	602	2.4	6.51	-86	0.63	--	--	--
M019	22-27	27.06	707	1	6.63	-81	1.28	--	--	--
M023	19.8-24.8	27.54	622	2.3	6.54	-70	0.98	--	--	--
M024	8.7-13.7	28.41	484	9.8	6.64	5.7	1.6	--	--	--
M025	8.6-13.6	26.28	1,878	85	6.57	41	3.25	--	--	--
M035	9-14	26.16	2,473	1.97	6.97	-52.4	0.67	--	--	--
M036	25-30	25.13	644	0	6.54	-68	0.7	--	--	--
M049	20-30	26.12	1,074	9.3	6.46	-79	1.28	--	--	--
M053	20-30	26.31	682	89.6	6.67	-83	1.07	--	--	--
M054	20-30	26.48	772	58.2	6.7	-107	0.53	--	--	--
M18D	20-30	26.13	731	9.7	6.6	-73	1.22	--	--	--
M22D	20-30	25.89	643	9.6	6.77	-84	0.98	--	--	--
M40D	18-28	25.46	674	59	6.62	-88	1.04	--	--	--
M40S	4-14	27.6	235	7.8	6.32	-36	1.41	--	--	--
M41D	16-26	25.23	1,405	1.47	6.73	-114.6	0.24	--	--	--

^aLocations starting with "DP" are Direct Push locations, all others are monitoring wells.^bTemperature corrected to 25°C.^cFerrous Iron > Total Iron.

-- = Not Measured.

*Table 4. COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
PIN05			Trench Site						
0500	2.5-12.5	4/10/2002	<1	<1	<1	ND	<1	<1	ND
PIN20			4.5 Acre Site						
0502	21.2-31.2	10/2/2001	<1	<1	<1	ND	0.4J	<1	ND
		4/9/2002	<1	1.4	<1	1.4	5.5	<1	6.9
		10/8/2002	<1	7.4	<1	7.4	28	<1	35.4
0503	13.2-23.2	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
DP01	18-22	10/1/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	2.2	<1	2.2
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/8/2002	<1	<1	<1	ND	0.99J	<1	ND
		10/7/2002	<1	0.2J	<1	0.2J	1.1	<1	1.1
	23-27	10/1/2001	<1	23	0.3J	23	51	9.8	83.8
		4/10/2002	<1	<1	<1	ND	11	15	26
	22-26	7/8/2002	<1	<1	<1	ND	2.3	7.3	9.6
		10/7/2002	<1	0.19J	<1	0.19J	2.5	6.3	8.8
DP02	18-22	10/1/2001	<1	5	<1	5	5.9	0.38J	10.9
		1/9/2002	<1	1.1	<1	1.1	6.1	0.44J	7.2
		4/11/2002	<1	1.6	<1	1.6	9.4	<1	11
		7/8/2002	<1	4.4	<1	4.4	18	0.46J	22.4
		10/8/2002	<1	74	<1	74	53	0.43J	127
	26-30	10/1/2001	0.29J	14	0.19J	14	31	3.9	48.9
		1/9/2002	2,600	20,000	800	20,800	6,800	<250	30,200
		4/11/2002	<100	4,400	160	4,560	4,100	<100	8,660
		7/8/2002	190	5,500	280	5,780	4,800	<100	10,770
		10/8/2002	380	3,600	140	3,740	3,000	<1	7,120
DP03	18-22	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/8/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
	24-28	10/1/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/8/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
DP04	25-29	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
	24-28	7/9/2002	<1	0.33J	<1	0.33J	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
DP05	23-27	10/1/2001	<1	<1	<1	ND	<1	19	19
		4/10/2002	<1	<1	<1	ND	<1	16	16
		7/9/2002	<1	<1	<1	ND	<1	11	11
		10/7/2002	<1	<1	<1	ND	0.58J	14	14
DP06	18-22	10/2/2001	<1	<1	<1	ND	12	8.6	20.6
		1/10/2002	<1	<1	<1	ND	11	12	23
		4/11/2002	<1	<1	<1	ND	5.4	14	19.4
		7/10/2002	<1	<1	<1	ND	10	11	21
		10/7/2002	<1	<1	<1	ND	6.4	17	23.4
	23-27	10/2/2001	<1	0.81J	<1	0.81J	24	6.9	30.9
	24-28	1/10/2002	<1	0.23J	<1	0.23J	12	8.7	20.7
	23-27	4/11/2002	<1	<1	<1	ND	4	13	17
	24-28	7/10/2002	<1	4.6	<1	4.6	46	5.3	55.9
		10/7/2002	<1	1.5	<1	1.5	40	14	55.5
DP07	18-22	10/2/2001	<250	16,000	120J	16,000	3,300	<250	19,300
		1/10/2002	210	4,000	110	4,110	2,800	<100	7,120
		4/11/2002	83	2,800	74	2,874	2,400	<50	5,357
		7/8/2002	91	2,100	54	2,154	1,700	<50	3,945
		10/8/2002	<50	1,600	120	1,720	1,700	<50	3,420
	26-30	10/2/2001	<50	21J	<50	21J	4,000	<50	4,000
		1/10/2002	<50	14J	<50	14J	2,400	<50	2,400
		4/11/2002	<100	210	<100	210	4,500	<100	4,710
DP08	18-22	10/2/2001	2.3J	77	0.52J	77	9.5	0.34J	86.5
		1/10/2002	2.6	37	0.9J	37	16	0.17J	55.6
		4/11/2002	1.5	25	0.5J	25	5.5	0.18J	32
		7/8/2002	0.73J	4.8	<1	4.8	6.1	<1	10.9
		10/8/2002	<1	10	<1	10	7.8	<1	17.8
	25-29	10/2/2001	31	35	0.21J	35	6.9	0.14J	72.9
	24-28	1/10/2002	2	1.4	<1	1.4	11	<1	14.4
	25-29	4/11/2002	42	46	1.9	47.9	13	<1	102.9
		7/8/2002	0.59J	1.4	<1	1.4	<1	<1	1.4
	24-28	10/8/2002	<2.5	130	9.2	139.2	34	<2.5	173.2
DP09	26-30	10/1/2001	<1	<1	<1	ND	<1	0.33J	ND
		1/8/2002	<1	<1	<1	ND	0.42J	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	0.34J	ND
	24-28	7/9/2002	<1	<1	<1	ND	<1	1.2	1.2
		10/7/2002	<1	1.6	<1	1.6	2.7	<1	4.3
DP10	26-30	10/1/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
	24-28	10/8/2002	<1	<1	<1	ND	<1	<1	ND

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
DP11	18-22	10/2/2001	<1	0.64J	<1	0.64J	1.4	8	9.4
		1/8/2002	<1	0.55J	<1	0.55J	1.4	9.7	11.1
		4/9/2002	<1	<1	<1	ND	<1	11	11
		7/9/2002	<1	<1	<1	ND	1.8	7.7	9.5
		10/7/2002	<1	0.36J	<1	0.36J	2	7.1	9.1
	26-30	10/2/2001	<1	<1	<1	ND	2.4	0.26J	2.4
		1/8/2002	<1	<1	<1	ND	3.1	0.54J	3.1
		4/9/2002	<1	5.7	<1	5.7	9.6	0.52J	15.3
	24-28	7/9/2002	<1	<1	<1	ND	<1	2.2	2.2
		10/7/2002	<1	0.23J	<1	0.23J	0.76J	2.6	2.6
DP12	18-22	10/2/2001	0.46J	1.6	<1	1.6	4.2	<1	5.8
		1/9/2002	<1	<1	<1	ND	4.6	0.16J	4.6
		4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/9/2002	<1	<1	<1	ND	8.7	<1	8.7
		10/7/2002	0.2J	0.14J	<1	0.14J	3.3	<1	3.3
	26-30	10/2/2001	<5	3.4J	<5	3.4J	390	<5	390
		1/9/2002	<5	<5	<5	ND	100	<5	100
		4/11/2002	<250	16,000	81J	16,000	27,000	<250	43,000
		7/9/2002	67,000	250,000	770J	250,000	23,000	<2,500	340,000
	25-29	10/7/2002	<250	19,000	<250	19,000	5,000	<250	24,000
DP13	18-22	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/9/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
	26-30	4/10/2002	<1	<1	<1	ND	0.37J	<1	ND
	24-28	10/8/2002	<1	<1	<1	ND	<1	<1	ND
DP14	18-22	10/3/2001	<1	2	<1	2	8.5	0.56J	10.5
		1/8/2002	<1	2	<1	2	14	0.75J	16
		4/8/2002	<1	0.78J	<1	0.78J	9.9	0.82J	9.9
		7/11/2002	<1	0.36J	<1	0.36J	12	0.6J	12
		10/10/2002	<1	0.64J	<1	0.64J	9.1	0.71J	9.1
	24-28	4/8/2002	<1	<1	<1	ND	1.5	0.17J	1.5
	22-26	10/10/2002	<1	<1	<1	ND	8.6	0.24J	8.6
DP15	18-22	10/3/2001	<1	21	1	22	8.8	0.13J	30.8
		1/8/2002	<1	31	1	32	16	0.28J	48
		4/8/2002	<1	24	0.58J	24	12	0.3J	36
		7/11/2002	<1	25	0.76J	25	11	0.3J	36
		10/10/2002	<1	21	1	22	10	0.2J	32
	22-26	1/8/2002	<1	2.1	<1	2.1	8.2	<1	10.3
		4/8/2002	<1	3.5	<1	3.5	7.4	<1	10.9
		7/11/2002	<1	4.7	<1	4.7	5.6	<1	10.3
	23-27	10/10/2002	<1	7.6	<1	7.6	9.3	<1	16.9

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
DP16	22-26	4/8/2002	<1	0.37J	<1	0.37J	<1	<1	ND
	23-27	7/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/10/2002	<1	0.96J	<1	0.96J	<1	<1	ND
DP17	18-22	10/3/2001	<1	0.12J	<1	0.12J	1.8	0.21J	1.8
		1/8/2002	<1	0.24J	<1	0.24J	2.8	0.5J	2.8
		4/8/2002	<1	0.35J	<1	0.35J	3.1	0.42J	3.1
		7/11/2002	<1	0.21J	<1	0.21J	2.6	0.7J	2.6
		10/10/2002	<1	0.5J	<1	0.5J	2.4	0.34J	2.4
	22-26	4/8/2002	<1	<1	<1	ND	3.4	0.32J	3.4
		7/11/2002	<1	<1	<1	ND	4	0.57J	4
		10/10/2002	<1	0.15J	<1	0.15J	2	0.22J	2
DP18	18-22	10/3/2001	0.15J	21	0.94J	21	2.8	<1	23.8
		1/8/2002	<1	20	0.94J	20	4.2	<1	24.2
		4/8/2002	<1	26	0.27J	26	3	<1	29
		7/11/2002	<1	16	0.24J	16	0.55J	0.13J	16
		10/10/2002	<1	17	0.37J	17	2.7	<1	19.7
	24-28	10/3/2001	<1	4.3	0.14J	4.3	4.1	<1	8.4
		1/8/2002	<1	1.1	<1	1.1	4.8	<1	5.9
		4/8/2002	<1	7.4	<1	7.4	4.3	<1	11.7
		7/11/2002	<1	3.4	<1	3.4	4.1	<1	7.5
	23-27	10/10/2002	<1	5.2	<1	5.2	3.7	<1	8.9
DP19	25-29	4/8/2002	<1	<1	<1	ND	<1	<1	ND
	23-27	10/10/2002	<1	<1	<1	ND	0.36J	<1	ND
DP20	18-22	10/3/2001	<1	0.35J	0.41J	0.76J	0.98J	<1	ND
		1/8/2002	<1	<1	0.32J	0.32J	<1	<1	ND
		4/8/2002	<1	<1	0.24J	0.24J	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	2.4	<1	2.4
		10/10/2002	<1	<1	0.37J	0.37J	3.4	<1	3.4
	25-29	1/8/2002	<1	<1	0.27J	0.27J	39	<1	39
		4/8/2002	<1	<1	1.8	1.8	90	<1	91.8
	24-28	10/10/2002	0.2J	0.16J	4.7	4.7	76	<1	80.7
DP21	18-22	10/3/2001	<1	<1	9.6	9.6	7.9	<1	17.5
		1/8/2002	0.42J	0.89J	9.4	9.4	13	<1	22.4
		4/9/2002	<1	0.34J	13	13	6.2	<1	19.2
		7/11/2002	<1	0.37J	7.2	7.2	14	0.19J	21.2
		10/10/2002	0.32J	0.78J	7.4	7.4	9.4	<1	16.8
	23-27	1/8/2002	0.3J	0.41J	0.27J	0.68J	34	0.57J	34
	24-28	4/9/2002	<1	0.38J	0.44J	0.82J	31	0.49J	31
	23-27	10/10/2002	0.27J	0.65J	0.98J	1.63J	27	0.27J	27
DP22	24-28	1/7/2002	0.71J	0.95J	1.2	1.2	85	1.4	87.6
		4/9/2002	0.23J	0.81J	1.2J	2.01J	87	1.3J	87
		7/10/2002	<2.5	<2.5	2.4J	2.4J	270	1.7J	270
	22-26	10/10/2002	2.5	2.9	1.6J	2.9	110	1.2J	115.4

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
DP23	25-29	1/7/2002	<1	<1	<1	ND	<1	0.27J	ND
		4/9/2002	<1	<1	<1	ND	<1	0.22J	ND
	24-28	7/10/2002	<1	<1	<1	ND	<1	0.22J	ND
		10/10/2002	<1	0.15J	<1	0.15J	0.84J	<1	ND
DP24	18-22	10/4/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	<1	0.24J	<1	0.24J	<1	<1	ND
		4/9/2002	<1	0.23J	<1	0.23J	<1	<1	ND
		7/10/2002	<1	0.41J	<1	0.41J	2.3	<1	2.3
		10/10/2002	<1	0.3J	<1	0.3J	1.4	0.25J	1.4
	24-28	4/9/2002	<1	<1	<1	ND	<1	0.35J	ND
	22-26	7/10/2002	<1	<1	<1	ND	<1	0.48J	ND
		10/10/2002	<1	<1	<1	ND	3	0.58J	3
DP25	18-22	10/4/2001	<1	<1	1	1	11	<1	12
		1/8/2002	0.49J	1	2.9	3.9	31	<1	34.9
		4/9/2002	<1	0.88J	1.6	1.6	20	<1	21.6
		7/10/2002	0.87J	0.86J	1.3	1.3	75	<1	76.3
		10/10/2002	<1	0.88J	1.7	1.7	55	<1	56.7
	24-28	10/4/2001	0.86J	<2.5	1.7J	1.7J	74	<2.5	74
		1/8/2002	90	34	42	76	160	<2.5	326
		4/9/2002	16	11	21	32	270	<2.5	318
		7/10/2002	3.6	5.8	24	29.8	76	<1	109.4
	23-27	10/10/2002	4.1	4.5	7.7	12.2	68	<1	84.3
DP26	26-30	10/4/2001	5,900	3,000	1,300	4,300	310	<100	10,510
		4/9/2002	12,000	4,000	1,200	5,200	<100	<100	17,200
	23-27	10/10/2002	80	48	29	77	190	<2.5	347
DP27	25-29	4/9/2002	0.11J	0.13J	<1	0.13J	<1	5.5	5.5
	22-26	10/10/2002	0.19J	0.21J	<1	0.21J	1.9	<1	1.9
DP28	18-22	10/4/2001	<1	<1	<1	ND	<1	<1	ND
		1/7/2002	0.11J	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/10/2002	<1	<1	<1	ND	<1	<1	ND
	24.5-28.5	4/9/2002	<1	<1	<1	ND	<1	<1	ND
	26-30	10/10/2002	0.14J	0.16J	<1	0.16J	0.82J	<1	ND
DP29	18-22	10/4/2001	<1	<1	<1	ND	<1	<1	ND
		1/7/2002	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	0.28J	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/10/2002	<1	<1	<1	ND	0.42J	0.36J	ND
	24-28	10/4/2001	<1	<1	<1	ND	<1	<1	ND
	22-26	1/7/2002	<1	<1	<1	ND	<1	<1	ND
	24-28	4/9/2002	<1	<1	<1	ND	<1	<1	ND
	22-26	10/10/2002	<1	0.22J	<1	0.22J	1.3	0.27J	1.3

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
DP30	18-22	1/7/2002	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/10/2002	<1	<1	<1	ND	<1	<1	ND
	26-30	10/4/2001	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
	23-27	10/10/2002	<1	<1	<1	ND	<1	<1	ND
DP31	18-22	10/2/2001	<1	0.78J	<1	0.78J	3.3	0.12J	3.3
		1/9/2002	<1	<1	<1	ND	<1	0.22J	ND
		4/10/2002	<1	<1	<1	ND	0.61J	<1	ND
		7/8/2002	<1	<1	<1	ND	0.86J	0.43J	ND
		10/8/2002	--	<1	<1	ND	0.72J	0.17J	ND ^c
	22-26	1/9/2002	<2.5	96	3.3	99.3	140	<2.5	239.3
	24-28	4/10/2002	2J	440	34	474	600	<10	1,074
	22-26	7/8/2002	<50	2,700	84	2,784	1,900	<50	4,684
		10/8/2002	<50	4,000	64	4,064	4,200	<50	8,264
DP32	18-22	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/9/2002	<1	<1	<1	ND	3.1	<1	3.1
		10/11/2002	<1	<1	<1	ND	<1	<1	ND
	23-27	4/10/2002	<5	80	<5	80	160	<5	240
		10/11/2002	<1	13	0.27J	13	65	0.16J	78
DP33	18-22	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/9/2002	<1	<1	<1	ND	<1	<1	ND
		10/11/2002	<1	<1	<1	ND	<1	<1	ND
	23-27	1/10/2002	<1	2.2	<1	2.2	4.4	<1	6.6
		4/10/2002	<1	1.7	<1	1.7	<1	<1	1.7
		7/9/2002	<1	35	<1	35	44	<1	79
		10/11/2002	<1	31	0.28J	31	51	<1	82
DP34	18-22	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/9/2002	<1	<1	<1	ND	<1	<1	ND
		10/11/2002	<1	<1	<1	ND	<1	<1	ND
	24-28	10/3/2001	<1	<1	<1	ND	<1	<1	ND
	23-27	1/10/2002	<1	<1	<1	ND	<1	<1	ND
	24-28	4/10/2002	<1	<1	<1	ND	<1	<1	ND
	23-27	10/11/2002	<1	<1	<1	ND	<1	<1	ND

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
DP35	18–22	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/9/2002	<1	<1	<1	ND	5.6	0.41J	5.6
		10/11/2002	<1	<1	<1	ND	0.85J	<1	ND
	23–27	4/10/2002	<1	1.6	<1	1.6	13	0.72J	14.6
		10/11/2002	<1	2.5	<1	2.5	15	0.3J	17.5
M001	20–25	10/2/2001	<1	<1	<1	ND	8.8	0.16J	8.8
		1/9/2002	<1	2.4	0.17J	2.4	23	0.34J	25.4
		4/10/2002	<1	<1	<1	ND	2.1	<1	2.1
		7/10/2002	<1	<1	<1	ND	0.9J	<1	ND
		10/9/2002	<1	0.13J	<1	0.13J	2.2	<1	2.2
M003	9–14	4/10/2002	<1	<1	<1	ND	<1	<1	ND
M005	25.8–30.7	4/10/2002	<1	<1	<1	ND	<1	<1	ND
M007	25.3–30.3	4/10/2002	<1	<1	<1	ND	<1	<1	ND
M011	23.7–28.7	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND
M012	8.6–13.6	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND
M015	20.8–25.8	4/11/2002	<1	<1	<1	ND	0.41J	<1	ND
		10/9/2002	<1	<1	<1	ND	1.4	<1	1.4
M019	22–27	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	0.66J	<1	ND
		4/10/2002	<1	<1	<1	ND	0.25J	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND
M023	19.8–24.8	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
M024	8.7–13.7	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
M025	8.6–13.6	4/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
M028	22-27	4/10/2002	<1	<1	<1	ND	<1	<1	ND
M035	9-14	10/4/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	0.29J	<1	0.29J	<1	<1	ND
		7/12/2002	<1	0.46J	<1	0.46J	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND
M036	25-30	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND
M049	20-30	10/3/2001	14	58	2.6	60.6	4.4	<1	79
		1/9/2002	15	57	2.6	59.6	8.6	<1	83.2
		4/9/2002	11	70	3.5	73.5	6.7	<1	91.2
		7/10/2002	5.9	90	5.4	95.4	9.8	<1	111.1
		10/9/2002	7	100	5.2	105.2	12	<2.5	124.2
M053	20-30	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	0.15J	0.49J	<1	0.49J	0.5J	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	1.7	<1	<1	ND	<1	<1	1.7
M054	20-30	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	<1	0.15J	<1	0.15J	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/10/2002	<1	<1	<1	ND	<1	<1	ND
		10/8/2002	<1	<1	<1	ND	<1	<1	ND
M18D	20-30	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/8/2002	<1	0.36J	<1	0.36J	1.4	<1	1.4
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	0.21J	<1	0.21J	<1	<1	ND
		10/9/2002	<1	1.1	<1	1.1	1.7	<1	2.8
M22D	20-30	10/2/2001	<1	<1	<1	ND	<1	<1	ND
		1/9/2002	<1	<1	<1	ND	0.9J	<1	ND
		4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	0.41J	<1	ND
M38D	20-30	4/11/2002	<1	<1	<1	ND	<1	<1	ND
M40D	18-28	10/4/2001	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND

*Table 4 (continued). COPC Concentrations from wells and DPT Locations at the 4.5 Acre Site
(reported in micrograms per liter)*

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE ^a	Vinyl chloride	Benzene	Total COPC ^b
FDEP MCL			3	70	100	63	1	1	
M40S	4-14	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		4/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	0.6J	<1	<1	ND	<1	<1	ND
M41D	16-26	10/3/2001	<1	<1	<1	ND	<1	<1	ND
		4/11/2002	<1	<1	<1	ND	<1	<1	ND
		10/9/2002	<1	<1	<1	ND	<1	<1	ND

^aTotal 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.

^bTotal COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE and trans-1,2-DCE values are not part of the Total COPC value because these values are included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.

^cThere were laboratory quality control issues with this sample, see Section 2.5.

ND = Not detected.

J = Estimated value, result is between the reporting limit and the method detection limit.

B = Analyte also found in method blank.

-- = No Data.

Appendix A

Laboratory Reports—October 2002 Quarterly Results

**Table A–1. Relative Percent Difference (RPD) for Duplicate Samples
4.5 Acre Site**

Sample ID	Duplicate ID	Case Number	Constituent	S ^a	D ^b	RPD Value	5 times DL ^c	Fail ^d
PIN20-DP01-18	PIN20-0553	B213924	cis-1,2-Dichloroethene	0.2	0.26	26.1	5	
			Methylene chloride	1.4	0.37	116.4	25	
			Toluene	0.19	0.27	34.8	5	
			Vinyl chloride	1.1	1.7	42.9	5	
PIN20-DP15-23	PIN20-0554	B214001	cis-1,2-Dichloroethene	7.6	6.4	17.1	5	
			Methylene chloride	1.8	1.6	11.8	25	
			Vinyl chloride	9.3	9.7	4.2	5	
PIN20-DP26-23	PIN20-0555	B213965	1,1-Dichloroethene	1.8	1.4	25.0	12.5	
			cis-1,2-Dichloroethene	48	36	28.6	12.5	
			Propane, 2-methoxy-2-methyl-	48	56	15.4	125	
			trans-1,2-Dichloroethene	29	26	10.9	12.5	
			Trichloroethene	80	66	19.2	12.5	
			Vinyl chloride	190	150	23.5	12.5	
PIN20-DP41-18	PIN20-0556	B214001	Benzene	0.12	0.25	70.3	5	
			Methylene chloride	0.47	0.76	47.2	25	
			Vinyl chloride	3	2.6	14.3	5	
PIN20-M019	PIN20-0550	B213939A/ B213940	Benzene	0.5	0.16	103.0	5	
			Ethylbenzene	0.5	0.17	98.5	5	
			m,p-Xylene	0.5	0.37	29.9	5	
			Methylene chloride	0.9	2.5	94.1	25	
			o-Xylene	0.5	0.21	81.7	5	
			Toluene	0.5	0.18	94.1	5	

^aS = Original sample (N001), VOC concentration in µg/L.

^bD = Duplicate sample (N002), VOC concentration in µg/L.

^cDL = Detection limit.

^dFail is an RPD greater than " 30% and an original or duplicate sample more than 5 times the detection limit.

End of current text